

REMARKS

I. Claim Changes

Independent claims 26, 32 and 42 have been amended to clarify and limit the manner in which the image data or data from the camera is used in the claimed method and to further limit the road or street section description obtained by processing image data from the camera.

According to the amended claim 26 the road or street section description obtained by processing the image data produced by the camera has been limited by the wording changes to lane quality information, building information and/or cycle lane information. Lane quality information would mean information regarding the condition of the lane that would affect ones ability to travel on the lane, for example whether or not there are potholes in the lane and the size of the lane. Another example would information regarding the depth of snow cover present in a lane and the results of snow plowing of the road. Alternatively or in addition the camera collects data regarding the existence and condition of a cycle lane for bicycle travel. Alternatively or in addition the camera collects building information regarding the condition of the road or street, which would affect the ability of a vehicle to travel over it. This sort of information is not displayed on traffic signs.

According to the amended independent claim 32 the road or street section description obtained by processing the image data produced by the camera

includes *cycle lane information, building information and/or lane quality information* and also includes *at least one of* a course of the at least one road or street section (8) relative to the vehicle (7), a spacing (10) between a vehicle longitudinal axis (L) and a street or road edge (E), a width (12) of the at least one street or road section (8), a number of lanes (9) on the at least one road or street section (8), a width (11) of a lane (9) in which the vehicle (7) travels *and* a curvature of the at least one street or road section (8). Dependent claim 35 has been amended to avoid indefinite wording because of the changes in claim 32.

According to the amended independent device claim 42 the road or street section description obtained by processing the image data produced by the camera includes *at least one of cycle lane information and lane quality information* and also includes *at least one of* a course of the at least one road or street section (8) relative to the vehicle (7), a spacing (10) between a vehicle longitudinal axis (L) and a street or road edge (E), a width (12) of the at least one street or road section (8), a number of lanes (9) on the at least one road or street section (8), a width (11) of a lane (9) in which the vehicle (7) travels, a curvature of the at least one street or road section (8), standing or parking space information, building information *and* alternative lane guidance.

The italicized wording is additional limiting wording that further limits the scope of independent claims 32 and 42. The alternative “or” wording in claims 32 and 42 has been changed to “at least one ... and” because all the information items listed in e.g. step d) of claim 32 would be useful or necessary in conducting the vehicle. The italicized information items are not displayed on traffic signs.

II. Anticipation Rejection

Claims 26, 30, 31 and 37 to 40 were rejected as anticipated under 35 U.S.C. 102 (b) by Heimann, et al (US Patent 5,948,042).

Heimann, et al, do disclose a method of continually updating a digital road map employed for traffic direction and guiding vehicles (column 2, lines 15 to 23). The method includes generating road data including providing vehicles with position determining devices (column 5, lines 25 to 30), which travel over the roads collecting vehicle position data. Route data including attributes for a particular road section associated with vehicle position data is also collected (column 5, lines 53 to 63). The attributes of primary interest to Heimann, et al, are the permitted directions of travel over a given road section and allowed turns at junctions and intersections. These road characteristics strongly influence the choice of a route through an urban area, where the permitted road directions change over the years (some streets are made one way, some turns become prohibited because of increased traffic volume), particularly for special vehicles, like vehicles carrying hazardous materials and oversized trucks that require a certain clearance for passage along a route.

For that reason it is especially important to collect data from road signs placed along a route or road in the method of Heimann, et al, because it is the road signs that include information regarding the legally permitted direction of traffic flow, permitted turns, clearance, maximum permitted weight and other

legal restrictions. When the data on these road signs changes, the established route must often be changed because it becomes legally blocked, especially for certain special vehicles.

Thus Heimann, et al, teach registering the data on the signs and the signs along the roads and streets over which the test vehicles collecting data travel using "opto-electronic" means (column 2, lines 55 to 60; column 3, lines 51 to 57; column 6, lines 55 to 65). Alternatively the signs may be equipped with radio transmitters to transmit their information regarding permitted direction of travel and/or allowed turns to the test vehicles collecting the route data. The "opto-electronic" means are cameras on the test vehicles in preferred embodiments. However the cameras of Heimann, et al, are used ~~solely~~ to acquire data from or register traffic signs that control permitted vehicle travel direction and turns along the traveled route (claim 7, col. 2, line 57 to 59; col 4, line 35 to 39; column 6, lines 26 & 57).

Applicants' step d) of method claim 26 is neither disclosed nor suggested by Heimann, et al. The image data collected by the image-producing device (camera) according to amended claim 26 is different from the data collected in the method of Heimann, et al. The image data includes "lane quality information", which would include the condition of the road surface, i.e. the presence or absence of potholes and possible snow cover, oil spills, etc., which can be an important safety issue. Cycle lane information is also not mentioned in Heimann, et al. Cycle lane information is not provided on signs. A camera can easily detect the presence of a cycle lane and its condition, because it is much narrower than

a vehicle lane. Also building information can be collected – the presence of construction sites on the streets and roads can be detected and lanes that are blocked by construction equipment that is more or less permanently place can be detected. In general, a camera mounted on test vehicles can also detect other information not present on road signs.

Applicants' method as claimed in claim 26 is a refinement of a method such as that described in Heimann, et al, for drivers who are sensitive to the quality of their travel, the condition of the road and various safety determining conditions, whereas the method of Heimann, et al, is primarily concerned with obtaining updated information regarding permitted routes over a road and/or street system, especially for certain special vehicles with legal route travel restrictions.

It is well established that each and every limitation of a claimed invention must be disclosed in a single prior art reference in order to be able to reject the claimed invention under 35 U.S.C. 102 (b) based on the disclosures in the single prior art reference. See M.P.E.P. 2131 and also the opinion in *In re Bond*, 15 U.S.P.Q. 2nd 1566 (Fed. Cir. 1990).

Heimann, et al, do not disclose analyzing the image data obtained by their cameras in their test vehicles to necessarily obtain cycle lane information, lane quality information and/or building information. The road and street description obtained by analyzing the image data must contain this latter information according to claim 26.

Claims 30 and 31 claim preferred embodiments of the method of amended

claim 26 and their features are not currently relied on to establish allowability of any claims.

The rejection of claims 37 to 38 is truly puzzling because a dependent claim includes the features and limitations of the independent claim on which it depends. Claims 37 and 38 only depend on independent claim 32, not claim 26. For that reason it is assumed that claims 37 to 38 are to be considered part of the group of claims listed below that were rejected as obvious over Heimann, et al, in view of Kawai, et al.

Further the multiple dependent claims 39 to 41 have been amended by deleting their dependence on claim 26 so that these claims also would be part of the group of claims rejected as obvious over Heimann, et al, in view of Kawai, et al. However new dependent method claims 45, 46 and 47, which contain the same subject matter as claims 39 to 41 but depend on claim 26. These changes have been made for convenience during further examination so that the two sets of claims may be considered separately.

Thus amended method claims 39 to 40 cannot be rejected as anticipated by Heimann, et al, because of the change in their dependency.

For the foregoing reasons and because of the changes in claims 26, 39 and 40, withdrawal of the rejection of claims 26, 30, 31 and 37 to 40 under 35 U.S.C. 102 (b) as anticipated by Heimann, et al, is respectfully requested.

Furthermore Heimann, et al, do not suggest analyzing the image data obtained by their cameras in their test vehicles to obtain cycle lane information, lane quality information and/or building information.

For the foregoing reasons and because of the changes in claims 26, 39 and 40, it is respectfully submitted that none of claims 26 to 31 should be rejected as obvious under 35 U.S.C. 103 (a) over Heimann, et al.

III. Obviousness Rejection Based on Heimann and Kawai

Claims 27 to 29, 32 to 36 and 41 to 44 were rejected as obvious under 35 U.S.C. 103 (a) over Heimann, et al (US Patent 5,948,042), in view of Kawai, et al (US Patent 6,577,334).

A. Claims 27 to 29

Claims 27 to 29 depend on method claim 26. As shown in the above section regarding anticipation, Heimann, et al, does not disclose or suggest the feature that the image information is analyzed to obtain cycle lane information, lane quality information and/or building information. In addition, Kawai, et al, do not disclose or suggest a system for producing road or street section data for a digital map including cycle lane, lane quality information and/or building information.

The road and street description obtained by analyzing the image data must contain cycle lane information, lane quality information and/or building information according to claim 26.

Kawai, et al, do not disclose or suggest the modifications of the

disclosures of Heimann, et al, that are necessary to arrive at the invention as claimed in claim 26 and, because they depend on claim 26, claims 27 to 29. In fact, the reasons for the 103 rejection in paragraph 6 of the Office Action do not include a citation of a section of the Kawai, et al, U.S. Patent that suggests using a camera to obtain cycle lane information, lane quality information and/or building information.

It is well established by many U. S. Court decisions that to reject a claimed invention under 35 U.S.C. 103 there must be some hint or suggestion in the prior art of the modifications of the disclosure in a prior art reference or references used to reject the claimed invention, which are necessary to arrive at the claimed invention. For example, the Court of Appeals for the Federal Circuit has said:

"Rather, to establish obviousness based on a combination of elements disclosed in the prior art, there must be some motivation, suggestion or teaching of the desirability of making the specific combination that was made by the applicant...Even when obviousness is based on as single reference there must be a showing of a suggestion of motivation to modify the teachings of that reference.." *In re Kotzab*, 55 U.S.P.Q. 2nd 1313 (Fed. Cir. 2000).

For the foregoing reasons Heimann, et al, and Kawai, et al, do not establish a case of *prima facie* obviousness of any of method claims 26 to 31.

B. Claims 32 to 36 and 41 to 47

Independent method claim 32 has been amended so that the road or

street section description obtained by processing the image data produced by the camera must include *cycle lane information, building information and/or lane quality information*.

Independent device claim 42 has been amended so that the road or street section description is even more comprehensive, but claim 42 is also limited to a device that provides a road or street section description that necessarily includes lane quality or condition information and/or cycle lane information.

There is no **hint or suggestion** in either of these two references, Heimann, et al, and Kawai, et al, of a method and/or device for producing road or street section data including cycle lane and lane quality information by processing image data from an image producing device. See MPEP 2141.

Claim 41 was rejected on the basis of "Official Notice" that use of "stereoscopic image-generating devices" is notoriously well known (presumably in the motor vehicle arts or the art of collecting data for digital maps for motor vehicles?). Applicants respectfully request the citation of a prior art reference that discloses a stereoscopic image-generating device and especially a prior art reference that discloses a stereoscopic image-generating device that is mounted on a vehicle and collects data regarding the route over which the vehicle travels (on land, sea or air).

It is respectfully submitted that stereoscopic image-generating devices are *probably* known, but their use in a claimed data acquisition method for collecting updating data for a digital road or street map over which motor vehicles travel

would not be obvious. Otherwise claim 7 of Heimann, et al would not have been allowable on the basis of the use of the video camera, since one could argue that video cameras are well known and their use to collect data in general is well known.

Furthermore it is respectfully submitted that the features of the preferred embodiments claimed in method claim 38 and devices claims 43 and 44 is not obvious from a combination of Heimann, et al, with Kawai, et al.

The items of information comprising the road and street section description set forth in independent method claims 32 and independent device claim 42 are not disclosed or suggested by Heimann, et al. Heimann, et al, alone discloses radio transmission of an updated road and street section description to a central computer or station for later dissemination to other vehicles traveling on the roads or streets. Kawai, et al, does not disclose this latter radio transmission of the road and street information, because Kawai, et al, is concerned with collecting road and street image data, which is processed in order to provide real time automatic control of the vehicle travel, for example to automatically control the vehicle so that it will travel centered in a particular lane on a road way. At least one indicator line on a road is detected so that the motion of the vehicle in relation to the indicator line can be automatically controlled (see Kawai, et al, abstract, the control device shown in fig. 1 and fig. 29 as described in the specification, claims 1 and 19, and column 1, line 56, to column 2, line 5).

Furthermore a substantial amount of road and street section information is

described and claimed in claims 32 and 42, for example in claim 42 the information comprises at least one of cycle lane information and lane quality information and also includes a course of the at least one road or street section (8) relative to the vehicle (7), a spacing (10) between a vehicle longitudinal axis (L) and a street or road edge (E), a width (12) of the at least one street or road section (8), a number of lanes (9) on the at least one road or street section (8), a width (11) of a lane (9) in which the vehicle (7) travels, a curvature of the at least one street or road section (8), standing or parking space information, building information and/or alternative lane guidance.

It is somewhat surprising that this amount of digital information could be transmitted on a real time basis by means of radio at successive points along a route traveled over by a rapidly traveling test vehicle.

It is respectfully submitted that the transmission of this data according to dependent claim 37 and dependent claims 43 and 45 is neither disclosed nor suggested by Kawai, et al. In Kawai, et al, there is no need or requirement to transmit any data from the vehicle to a central station or computer.

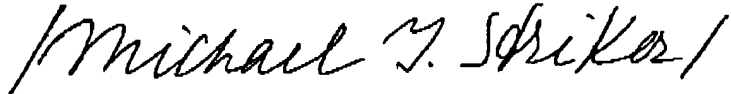
Withdrawal of the rejection of claims 27 to 29, 32 to 36 and 41 to 44 as obvious under 35 U.S.C. 103 (a) over Heimann, et al, in view of Kawai, et al, is respectfully requested.

Thus it is respectfully submitted that none of the amended claims 26 to 44 and new claims 45 to 47 should be rejected under 35 U.S.C. 103 (a) over Heimann, et al, in view of Kawai, et al.

Should the Examiner require or consider it advisable that the specification, claims and/or drawing be further amended or corrected in formal respects to put this case in condition for final allowance, then it is requested that such amendments or corrections be carried out by Examiner's Amendment and the case passed to issue. Alternatively, should the Examiner feel that a personal discussion might be helpful in advancing the case to allowance, he or she is invited to telephone the undersigned at 1-631-549 4700.

In view of the foregoing, favorable allowance is respectfully solicited.

Respectfully submitted,



Michael J. Striker,

Attorney for the Applicants

Reg. No. 27,233